

Administration of Barack Obama, 2016

Remarks at the White House Frontiers Conference at Carnegie Mellon University in Pittsburgh, Pennsylvania

October 13, 2016

The President. Thank you, everybody. Please have a seat. Thank you. Well, thank you, Alexis, for that introduction. I love that story that she bumped into me on the elevator. What she didn't mention, by the way, is that she started on her pre-med degree when she was 16, bumping into me in the elevator. She was already well on her way. So, to the rest of you, good luck. *[Laughter]* Hope you already have tenure, because Alexis is coming. *[Laughter]*

I'm only going to speak briefly today because we have an amazing panel and I want to learn from the people who are in attendance here today. But I want to start by recognizing Mayor Peduto of Pittsburgh, who has been an extraordinary innovator and city leader. And give—*[applause]*—yes. Congressman Doyle, who fully supports our innovation agenda, and we need strong allies in Congress, so give Mike Doyle a big round of applause, please.

We also have people from across our agencies: Transportation Secretary Anthony Foxx, NIH Director Francis Collins, National Science Foundation Director France Cordova. And I want to thank two extraordinary leaders who once served in my administration and did extraordinary work: President Suresh of Carnegie Mellon and Chancellor Gallagher of Pitt. Part of, sort of, the Obama alumni mafia here. *[Laughter]* As well as all the faculty and students and staff here at CMU and Pitt for allowing us to turn your campuses into a science fiction movie for the day. *[Laughter]*

Earlier today I got a chance to see some pretty cool stuff. A space capsule designed by the private sector to carry humans out of our atmosphere. Small, unmanned quadcopters that can search disaster areas and survey hard-to-reach places on bridges that might need repairs. I also successfully docked a capsule on the International Space Station. It was a simulation, but I—trust me, I stuck the landing. *[Laughter]*

But here's the thing about Pittsburgh: This kind of stuff is really nothing new. Most folks have probably heard about how this city is testing out a fleet of self-driving cars. But Pittsburgh has been revitalizing itself through technology for a very long time. There is a reason that U.S. Steel Tower is now also the corporate home of the University of Pittsburgh Medical Center, because the Steel City is now home to groundbreaking medical research and world-class universities. It's the birthplace of some of the most advanced artificial intelligence and robotics systems the world has ever seen. And you are investing in your young people with afterschool STEM programs and maker faires, and "Girls of Steel" robotics teams. And that's how this city came back after an iconic industry fell on tougher times: doubling down on science, doubling down on tech, doubling down on innovation, all of which can create amazing new jobs and opportunities.

And stories like that are not just happening here in Pittsburgh or in Silicon Valley. They're happening in Chattanooga and in Charleston and in Cincinnati, cities where we're seeing science and technology spur new jobs and new industries, new discoveries that are improving our lives and, in many cases, saving lives.

And that's consistent with this Nation, who we are: a nation born from an idea that became the world's laboratory. There aren't a lot of countries where one of your Founding

Fathers has an idea to fly a kite in a thunderstorm and helps to fundamentally change how we think about electricity. A place where the women who solved the equations to take us into space, even though they weren't always acknowledged. A nation whose engineers brought us the Internet. Innovation is in our DNA. Science has always been central to our progress, and it's playing a leading role in overcoming so many of our greatest challenges.

That's as true today as it's ever been. Only with science can we make a shift to cleaner sources of energy and take steps to save the only planet we have. Only with science do we have the chance to cure cancer or Parkinson's or other diseases that steal our loved ones from us way too soon. Only through science will we have the capacity to reengineer our cities as populations grow, to be smarter and more productive, to lead humanity farther out into the final frontiers of space—not just to visit, but to stay—and ensure that America keeps its competitive advantage as the world's most innovative economy.

And some of—I was doing some pictures before I came out here with some folks, and they said, thank you so much for what you've done for science. And I confessed, I am a science geek. I'm a nerd. *[Laughter]* And I don't make any apologies for it. *[Applause]* I don't make any apologies for it. It's cool stuff. *[Laughter]* And it is that thing that sets us apart: that ability to imagine and hypothesize and then test and figure stuff out and tinker and make things and make them better and then break them down and rework them.

And that's why I get so riled up when I hear people willfully ignore facts—*[laughter]*—or stick their heads in the sands about basic scientific consensus. It's not just that that position leads to bad policy, it's also that it undermines the very thing that has always made America the engine for innovation around the world. It's not just that they're saying climate change is a hoax or taking a snowball on the Senate floor to prove that the planet's not getting warmer. *[Laughter]* It's that they're doing everything they can to gut funding for research and development, failing to make the kinds of investments that brought us breakthroughs like GPS and MRIs and put Siri on our smartphones, and stonewalling even military plans that don't adhere to ideology.

That's not who we are. We don't listen to science just when it fits our ideologies or when it produces the results that we want. That's the path to ruin. Sixty years ago, when the Russians beat us into space, we didn't deny that Sputnik was up there. *[Laughter]* That wouldn't have worked. No. We acknowledged the facts, and then we built a space program almost overnight and then beat them to the Moon. And then, we kept on going, becoming the first country to take an up-close look at every planet in the solar system. That's who we are. That's where facts will get you. *[Laughter]* That's where science will get you.

And that's why, in my first Inaugural Address, I vowed to return science to its rightful place. And by the way, I want to make clear: This idea that facts and reason and science are somehow inimical to faith and feelings and human values and passions, I reject that. For us to use our brains doesn't mean that we lose our heart. It means that we can harness what's in our heart to actually get things done.

And that's why in the first few months of my administration, we made the single largest investment in basic research in our history, because innovation is not a luxury that we do away with when we're tightening our belts. It's precisely at those moments, when we've got real challenges, when we double down on new solutions that can lead to new jobs and new industries and a stronger economy.

So, over these last 8 years, we've worked to recruit the best and brightest tech talent into the administration. We've partnered with academia and the private sector. We've empowered citizen scientists to take on some of our biggest challenges. We've reimaged our Federal approach to science through incentive prizes and 21st-century moonshots for cancer, and brain research, and solar energy. We've turbocharged the clean energy revolution. We've built the architecture to unleash the potential of precision medicine, dropped enough new broadband infrastructure to circle the globe four times, applied data and evidence to social policy to find out what works; scale up when it works, stop funding things that don't, thereby fostering a new era of social innovation.

We've helped once-dark factories start humming again, putting folks to work manufacturing wind turbine blades longer than the wingspan of a 747. And we realized that we can't look to the future if we're also not going to lift up the generation that's going to occupy that future. So we started the White House Science Fair to teach our kids to send a message that the winner of the Super Bowl isn't the only one that deserves a celebration in the East Room. We hooked up more of our classrooms and communities to the high-speed Internet that will help our kids compete. We're pushing to bring computer science to every student. We're on track to prepare 100,000 STEM teachers in a decade.

And as a running thread throughout this, we are working to help all of our children understand that they, too, have a place in science and tech, not just boys in hoodies, but girls on Native American reservations, kids whose parents can't afford personal tutors. We want Jamal and Maria sitting right next to Jimmy and Johnny, because we don't want them overlooked for a job of the future.

America is about Thomas Edison and the Wright Brothers, but we're also the place you can grow up to be a Grace Hopper or George Washington Carver or a Katherine Jones [Johnson]^{*} or an Ida B. Wells. We're the nation that just had six of our scientists and researchers win Nobel Prizes, and every one of them was an immigrant.

So part of science, part of reasons, part of facts is recognizing that to get to where we need to go we need to lift everybody up, because we're going to be a better team if we've got the whole team. We don't want somebody with a brilliant idea not in the room because they're a woman. We don't want some budding genius unavailable to cure cancer or come up with a new energy source because they were languishing in a substandard school as a child.

So that's what I've been focused on. Alexis has done some things. I've done some things too. [Laughter] But look, I only get two terms and what——

Audience members. Boo!

The President. Which is fine—[laughter]—because the Presidency is a relay race. We run our leg, then we hand off the baton. And that's why this conference isn't just about where we've been, it's about where we're going. We're looking to tomorrow. We're trying to institutionalize the work that we've been doing over these last 8 years. But we also want to make sure that these partnerships continue to thrive well beyond my administration. The future is yours to create. It's all of ours.

And we've got a tremendous group here from all across America: from the sciences, from industry, from academia. All of you in your own fields are transformative. You're transforming the way we treat diseases and building smarter and more efficient and more inclusive

^{*} White House correction.

communities. You're unlocking the data that can make our criminal justice system smarter and fairer. You're harnessing the power of artificial intelligence—big data robotics, automation—for the good of all of us. You're breaking new ground on clean energy and giving us our best hope of staving off the worst consequences of climate change. And you're taking us on that final frontier, firing up the boosters for humanity's journey to Mars.

So today I am proud to build on your work. We've announced Federal and private commitments totaling more than \$300 million to throw into the pot: investing in smarter cities, expanding our Precision Medicine Initiative, spurring the development in small satellite technology. We're supporting researchers working to better understand our brains—how we think and learn and remember.

And in fact, it's in that area where I'd like to close: brain research. Before I came onstage, about half an hour ago, I had the chance to meet an extraordinary young man named Nathan Copeland. And back in 2004, Nathan was a freshman in college, studying advanced sciences, interested in nanotechnology. And he was in a car accident that left him paralyzed. For years, Nathan could not move his arms, couldn't move his legs, needed help with day-to-day tasks.

But one day, he was contacted by a research team at Pitt, and they asked if he wanted to be involved in an experimental trial supported by DARPA, the same agency that gave us the Internet and night vision goggles and so much more. And since he was a scientist himself, Nathan readily agreed. So they implanted four microelectrode arrays into his brain, each about the size of half a button. And those implants connect neurons in his brain with a robotic arm so that today, he can move that arm the same way you and I do—just by thinking about it. But that's just the beginning. Nathan is also the first person in human history who can feel with his prosthetic fingers.

Think about this. He hasn't been able to use his arms or legs for over a decade, but now he can once again feel the touch of another person. So we shook hands. He had a strong grip, but he had kind of toned it down. *[Laughter]* And then, we gave each other a fist bump.

And researchers will tell you there's a long way to go; he still can't feel with his thumb or experience hot and cold, but he can feel pressure with precision. That's what science does. That's what American innovation can do. And imagine the breakthroughs that are around the corner. Imagine what's possible for Nathan if we keep on pushing the boundaries. And that's what this Frontiers Conference is all about: pushing the bounds of what is possible.

And that's why I've been so committed to science and innovation, not just so that we can restore someone's sense of touch, but so we can revitalize communities, revitalize economies, reignite our shared sense of possibility and optimism. Because here in America, with the right investments, with the unbelievable brilliance and ingenuity of young people like Alexis and Nathan, there is nothing we cannot do. So let's keep it going. Let's get to work.

With that, I think it's time to start our panel. Thank you, everybody. Thank you.

NOTE: The President spoke at 3:21 p.m. in the Wiegand Gym at the Jared L. Cohon University Center. In his remarks, he referred to Alexis Chidi, postdoctoral student, Medical Scientist Training Program of the University of Pittsburgh and Carnegie Mellon University; Christine Darden, Margery Hannah, and Katherine G. Johnson, mathematicians and former employees, NASA's Langley Research Center in Hampton, VA; and Dunbar, PA, resident Nathan Copeland, a patient at the University of Pittsburgh Medical Center in Pittsburgh, PA.

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